Math 8   Assignment 5

Due: Start of class on Friday April 30.

Your goal is to identify the elementary function $f(x)$ using the following information:

1. $f(x)$ has a Taylor Series expansion about $x = 0$,

2. $-f(x) = f''(x)$,

3. $f(0) = 1$, and

4. $f'(0) = 1$

Write out the first ten terms of the power series of f. Note that the odd terms and even terms each have their own pattern. We can separate the power series of f into two power series, the first containing only even terms, and the second containing only odd terms. Explain why this is allowed. You should now recognize f as the sum of two elementary functions. What are they?